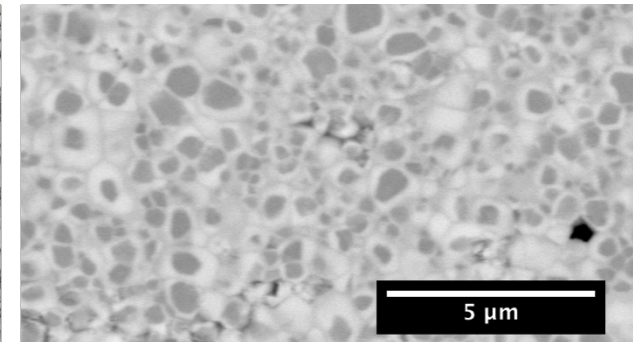
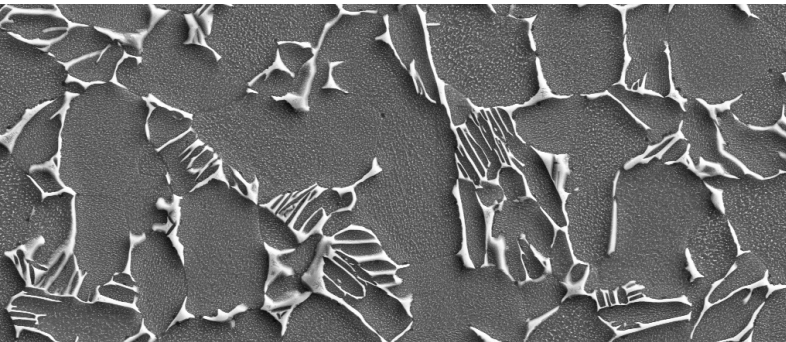


Exceptional service in the national interest



Bead Blasting Contamination of as Machined Ti-6Al-2Sn-4Zr-2Mo

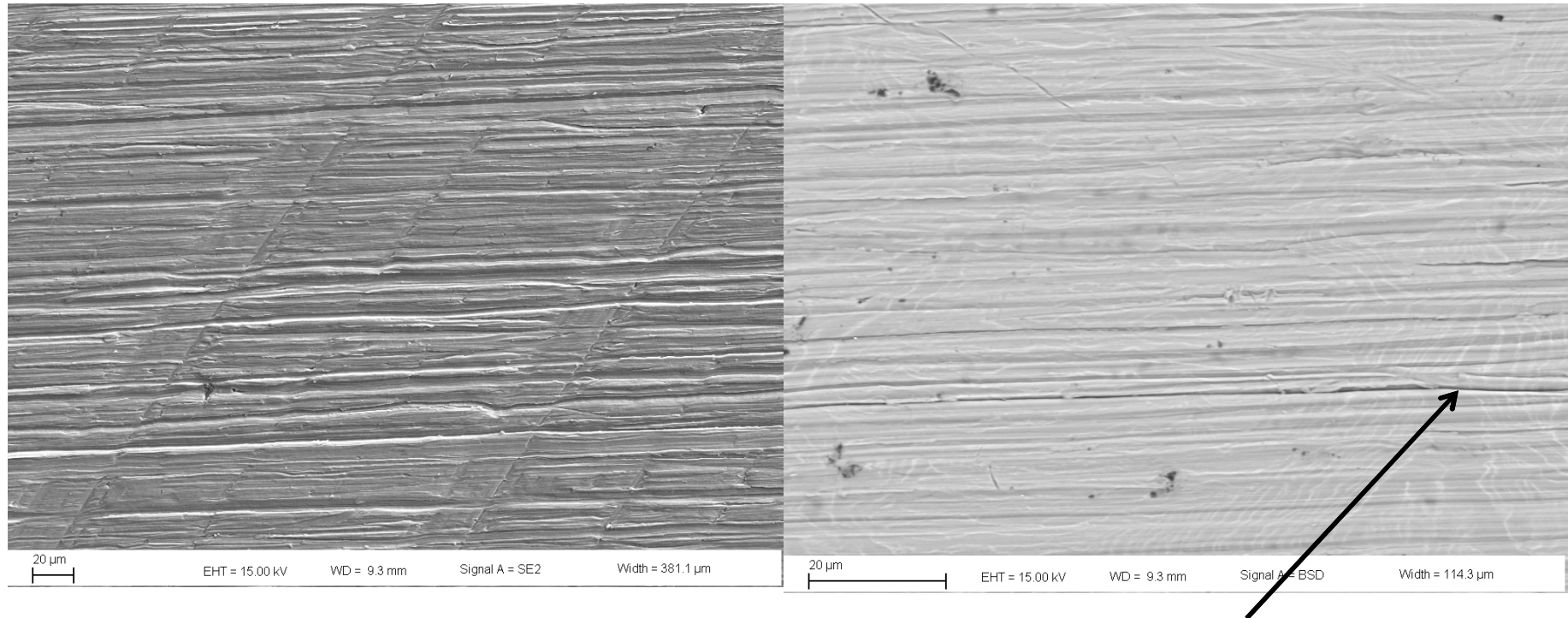
Harlan J. Brown-Shaklee (1816) and Bonnie McKenzie (1819)

Unclassified Unlimited Release

Summary and recommendations

- Bead blasting of as machined surfaces can implant bead blasting media into the machined article
 - Al_2O_3 bead blasting media was implanted in a surface that was scheduled to receive a post machining braze process
 - Extra material must be ground to remove bead blasting damage that will impact braze chemistry and likely impact joint strength
- Bead blasting should only be completed if specified by drawing
 - If post machining bead blasting is specified in drawing, allowances for media type should be explicitly communicated between vendor and SNL
 - Media allowances should be based on best knowledge of alloy chemistry
- Surfaces that are subjected to post machining joining via brazing, soldering, ultrasonic welding, laser welding, or arc (GTAW, PAW, MAW, etc.) should receive bead blasting with specified media ONLY when specified by drawing or explicitly communicated by customer

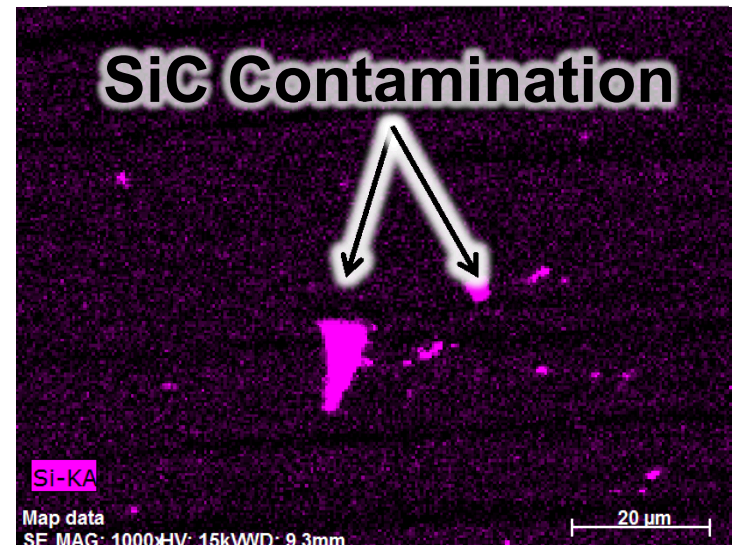
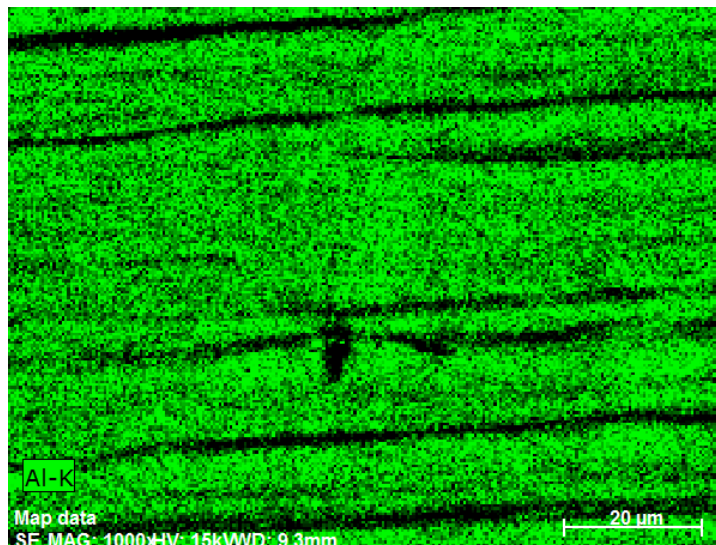
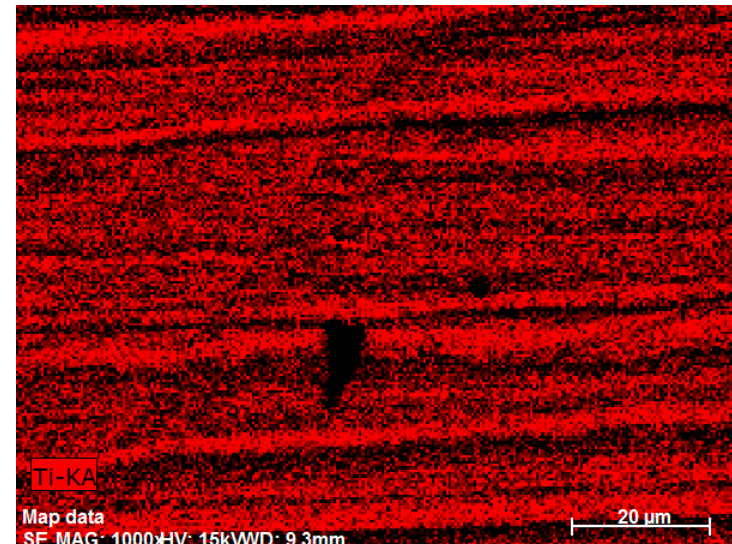
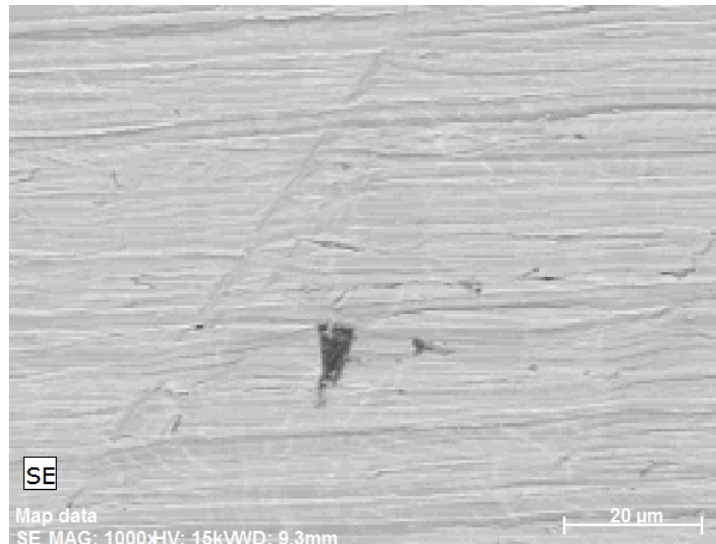
As machined surface of Ti-6242



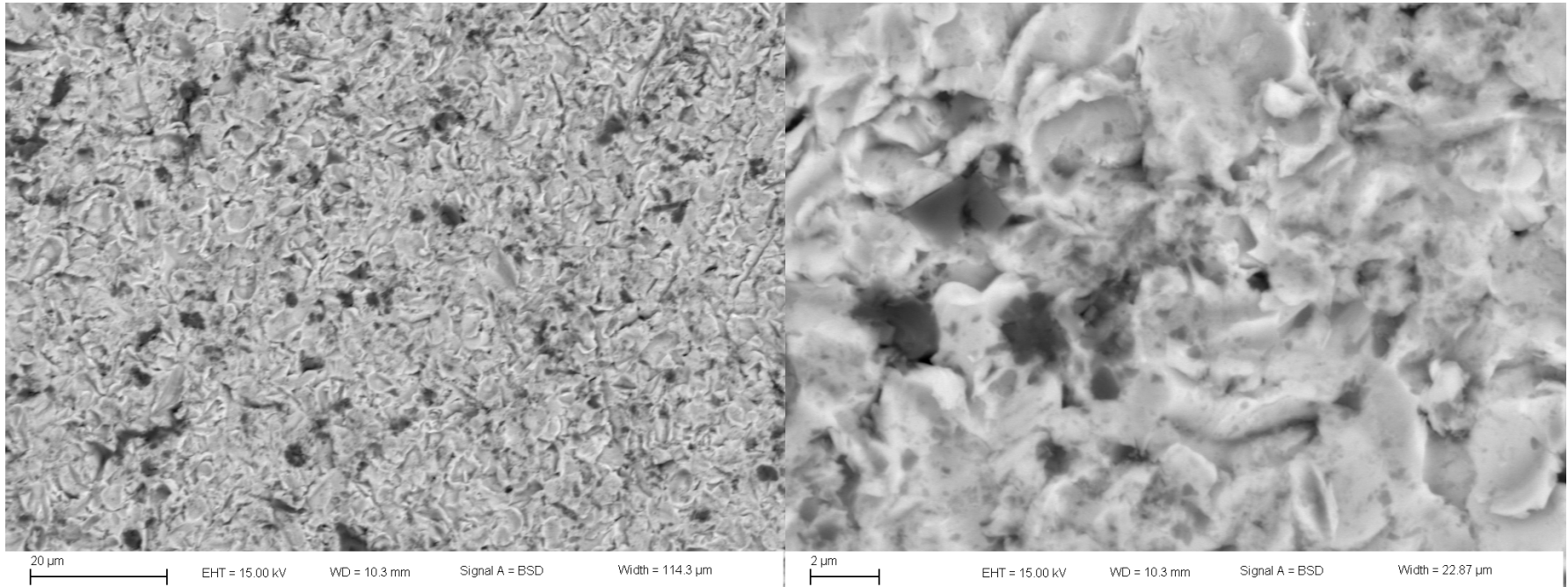
Mo-segregation

- As machined Ti shows scratches from milling and linear grinding
- Some molybdenum segregation is evident in BSE image (right)

As machined Ti-6242 shows uniform ^{UUR} aluminum distribution



Bead blasted Ti-6242 has implanted Al_2O_3



- Dark spots are lower average atomic number which suggests the presence of Al_2O_3 bead blasting contamination

EDS of bead blasted surface reveals co-located Sandia National Laboratories Al and O peaks → confirms Al_2O_3 implantation

